

1 Executive Summary

This chemical data report was prepared by the U.S. Army Corps of Engineers Alaska District Engineering Services Branch, Materials Section (CEPOA-EN-ES-M), at the request of the Alaska District Project Management Division Military Branch (CEPOA-PM-M). This memorandum summarizes the results of chemical analysis of samples collected during the pre-construction chemical/geotechnical investigation for the proposed Family Housing Revitalization Project, located on Fort Wainwright, Alaska.

The investigation consisted of seven 50-foot borings and twenty-three 25-foot borings drilled for the pre-construction chemical/geotechnical investigation at the proposed North Town Neighborhood construction site. Soil samples from the thirty borings were field screened for evidence of contamination near the surface and at subsequent five-foot intervals until borehole completion. Soil samples exhibiting evidence of contamination were submitted for chemical analysis. Several random samples not exhibiting evidence of contamination were also submitted for chemical analysis to determine background levels of analytes. Soil samples for chemical analysis were not collected from below the water table, however, these cuttings were field-screened for evidence of contamination. Selected random surface samples were tested for organochlorine pesticides by EPA Method 8081A and lead by EPA Method 6010B. All other submitted samples were tested for benzene, toluene, ethylbenzene, and xylenes (BTEX) by method 8021B, gasoline range organics (GRO) by Alaska Method AK101, diesel range organics (DRO) by Alaska Method AK102, residual range organics (RRO) by Alaska Method AK103 and lead.

Benzene was detected at levels exceeding the regulatory limit of 0.020 mg/kg in 2 of 4 sampling locations (AP-7916 at 9.5 bgs and AP-7930 at 4.5 bgs). All other detected analyte concentrations were below the most stringent 18 AAC 75 regulatory limits. AP-7916 is in the vicinity of Site 3 within Operable Unit 2. The extent of benzene contamination in this area is not known. The heated headspace PID reading was similar to background levels, and there was no other evidence indicating fuel contamination in the area. Miscellaneous manmade debris (including fiberboard, nails, metal scraps, glass, etc) was encountered between 3 and 6 feet bgs at AP-7930. The margins of the buried debris in the vicinity of AP-7930 are not known, however, buried debris was not encountered in any of the adjacent boreholes.

2 Objective

The purpose of the investigation was to characterize soils in the proposed construction area, to allow planning for the disposal of potential contaminated soils excavated during construction. The data obtained is to be used to estimate the amount, nature, and approximate extent of contamination present in soil that is expected to be disturbed during construction; it is not intended as a comprehensive environmental assessment of the site. Groundwater was not sampled during the investigation.

3 Site Background

3.1 Location

Fort Wainwright occupies 918,000 acres on the east side of Fairbanks (Figure 1), and includes the main post area, a range complex, and two maneuver areas. Fort Wainwright was originally established in 1938 as a cold-weather testing station. During World War II, it served as a crew and supply transfer point for the U.S. Lend-Lease program to the Soviet Union. After the war, it became a resupply and maintenance base for the remote Distant Early Warning sites, an experimental station in the Arctic Ocean and the Nike Hercules missile sites in Interior Alaska. In 1961, all operations were transferred to the U.S. Army.

Primary missions at Fort Wainwright include training infantry soldiers in the arctic environment, testing of equipment in arctic conditions, preparation of troops for defense of the Pacific Rim, and rapid deployment of troops worldwide. Onsite industrial activities include the operation, maintenance, and repair of fixed-wing aircraft, helicopters, tactical and nontactical vehicles, weapon systems, and general support activities. The activities also include power generation, standby power and water production, steam heat production, and drinking water production, treatment, and distribution.

The Fort Wainwright cantonment area is composed of approximately 4500 acres on the east of downtown Fairbanks, partly within the city limits. The rest of Fort Wainwright consists of ranges and military maneuver areas. The Chena River flows through Fort Wainwright and the city of Fairbanks into the Tanana River.

3.2 Project Background

The chemical sampling and screening is being performed to provide contamination information for family housing revitalization activities within two of Fort Wainwright's communities. The proposed housing project will revitalize a portion of the North Town Neighborhood while continuing whole neighborhood revitalization efforts within the Southern Cross Neighborhood. The proposed construction and demolition activities are in accordance with Projects NT-1 and NT-18A of the Fort Wainwright Housing Community Plan (HCP), adopted June 1997, and as modified October 1997. The proposed project includes the demolition of five 8-plex structures within the Southern Cross Neighborhood, representing 40 Junior Non-Commissioned Officer (NCO) Family Housing Units (Facility Category Code (FCC) 71116). The proposed project will replace these buildings with the construction of in-fill housing within the North Town neighborhood. The in-fill housing will consist of 40-family housing units of 3-bedroom Company Grade/Warrant Officer housing (FCC 71114) with garages. Additionally, the proposed project will replace seven 8-plex structures within the North Town Neighborhood, representing 56 Company Grade/Warrant Officer Family Housing Units (FCC 71114). These units will be replaced with 35-family housing units of 4- bedroom Company Grade/Warrant Officer housing (FCC 71114) with garages. The project's proposed Supporting Facility Work includes demolishing the existing Southern Cross housing structures, utility connections, and pavement areas, along with surface restoration. The proposed Supporting Facility Work also includes extending and reconstructing portions of the North Town Neighborhood's underground utilidor system and utility distribution systems. Additionally, the proposed Supporting Facility

Work includes reconfiguring and constructing neighborhood trails, constructing driveways and sidewalks, constructing privacy fencing at the rear of each unit, constructing a neighborhood play area, re-vegetating and landscaping the neighborhood open spaces, and landscaping the neighborhood streetscapes. To the greatest extent possible, all proposed landscaping, trail, and sidewalk configurations will be in accordance with the Fort Wainwright Housing Community Plan.

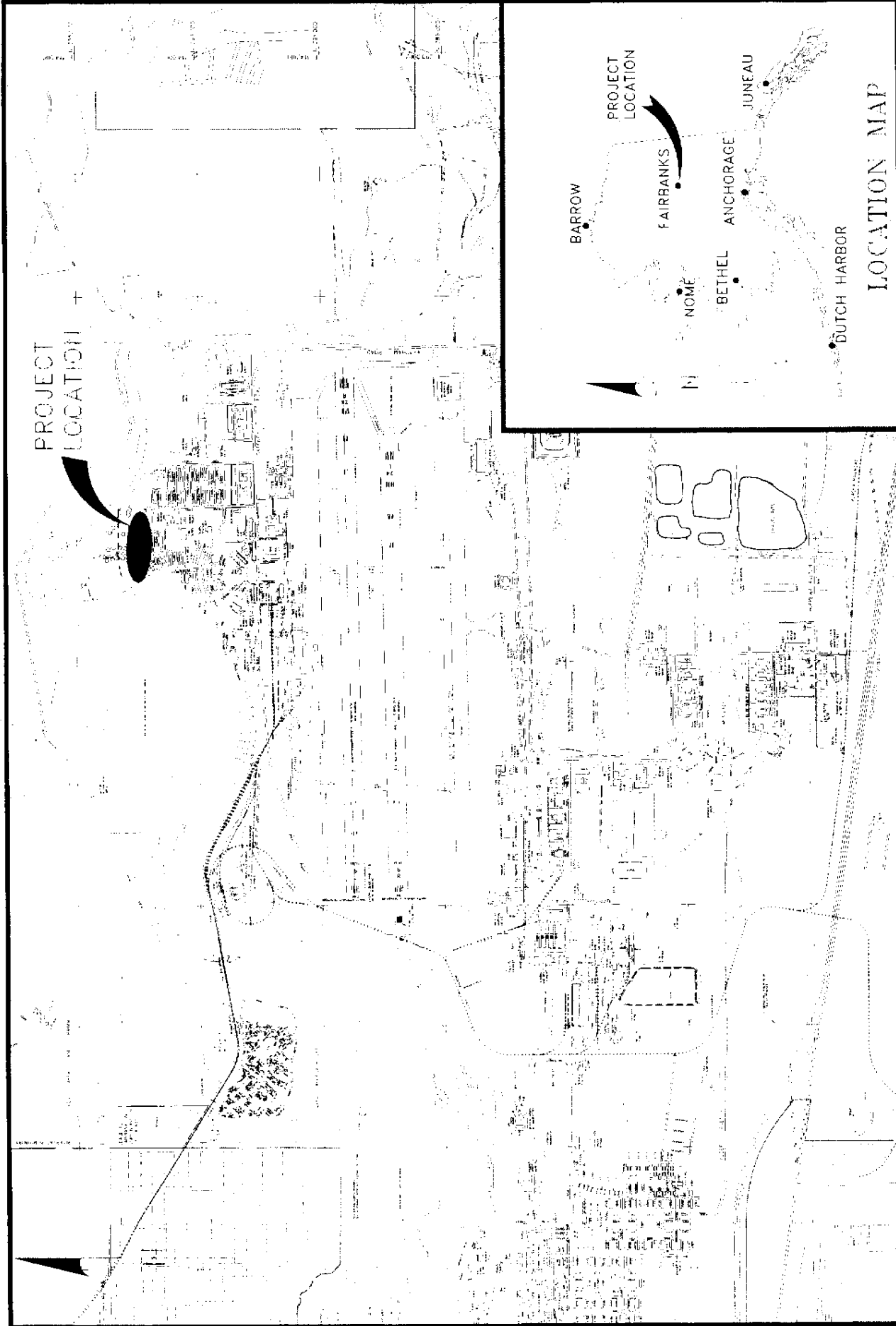
3.3 Site Background

The existing 8-plex housing inventory was constructed in the late 1940s. The housing units are significantly undersized, with company grade officer families living in 3-bedroom dwelling units of approximately 866 NSF. There are insufficient 4-bedroom units to meet the current housing requirements. The units do not provide the authorized 300 SF of indoor activity room authorized for cold climates. The units have only one bathroom, which is located on the second floor, and no garages. Because of the small net living area, many families use the unfinished basements as children play areas and for storage even though they have no fire egress and were not designed or intended as living area. The existing structures feature insufficient insulation, resulting in uneven heating and contributing to excessively high energy costs. Partition walls between units are not fire rated and have no sound proofing, thus creating a "boarding house," rather than a private home atmosphere. Noise from adjoining units disrupts family life and sleep. Lack of fire proofing between units could lead to the loss of an entire building. Interior electrical systems are inadequate for the needs of modern family living. The housing density and the layout of central parking courts has resulted in crowded conditions with inadequate parking in most neighborhoods. Many of the utilities do not meet code requirements, and deterioration has begun to generate maintenance and reliability concerns.

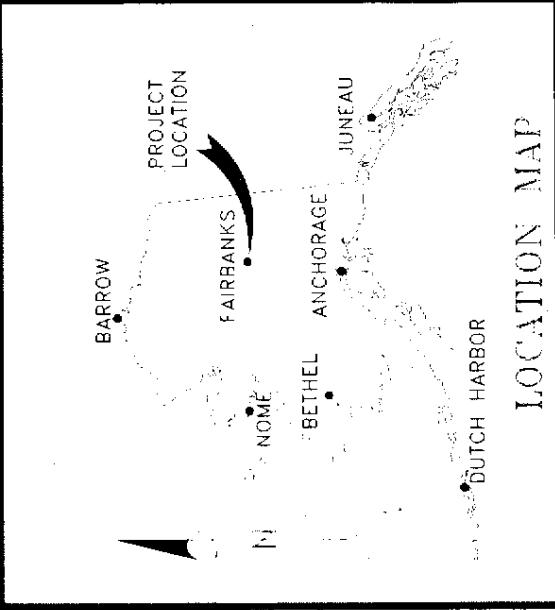
The northwest portion of the proposed construction site is in Operable Unit 2 North Post Source Area. In 1988, Ecology & Environment (E&E) conducted a risk assessment (RA) at the North Post Source Area. The RA identified several areas of concern at the site. The areas of greatest concern were designated as Sites 1, 2, 3, and 4. Two of these sites (Site 1 and Site 3) are within the proposed project area (see Figure 2). Site 1 is an area immediately north of buildings 1038 and 1039. During a 1986 sampling event, DDT was detected at a concentration of 0.1 mg/kg in a surface sample from boring B-7. In 1989, additional samples were collected within a 25 foot radius of B-7. DDT was detected in 1 of 5 samples at a concentration of 0.58 g/kg. Site 3 is in the vicinity of a POL pipeline break. An 8-inch diameter POL pipeline, constructed in the 1940 s, crossed the North Post Source Area at Site 3. The pipeline transported aviation gas from the Birch Hill UST Tank Farm until the 1950s. The pipeline was then used to transport diesel fuel until the 1960s. When the Birch Hill UST Tank Farm and the hydrant refueling system on the north taxiway were closed in the 1960s, the pipeline was abandoned in place. Several spills have been documented along the pipeline route. In 1980, petroleum was observed seeping from the North Post Source Area into the Chena River. Potential contaminants in this area are gasoline range organics (GRO), diesel range organics (DRO), and associated volatile organic compounds (VOCs) and semi-volatile organic compounds (SVOCs).

FTW230

FY01 REPLACEMENT FAMILY HOUSING



LOCATION MAP



LOCATION AND VICINITY MAP
FAMILY HOUSING REVITALIZATION
FORT WAINWRIGHT, ALASKA

ALASKA DISTRICT
CORPS OF ENGINEERS
ENGINEERING SERVICES

DATE: 10/11/06
DATE: 10/11/06
SCALE: 1:50,000

To the southwest of the proposed construction site is Operable Unit 5, a known source of petroleum hydrocarbon contamination. The subsection of Operable Unit 5 that is closest to the project area is the East Quartermaster's Fueling Station (EQFS). Contaminants that have been encountered in this area are GRO, DRO, VOCs and SVOCs. Also, several former underground storage tanks have been identified southeast of the project site.

4 Field Activities

Field work began on 18 January 2001, and ended on 31 January 2001. The investigation consisted of drilling seven 50-foot borings and twenty-three 25-foot borings to evaluate the physical and engineering properties of the subsurface soils, and to estimate the extent of soil contamination at the North Town Neighborhood proposed construction site. Drilling was performed by the Alaska District's in-house drill crew. Samples collected to determine physical and engineering properties were collected by an Alaska District engineer (CEPOA-EN-ES-SG), and the results are presented separately in a geotechnical findings report. Screening and sampling for chemical contaminants was conducted by Douglas Deters (CEPOA-EN-ES-M chemist), using the methods described below.

Test borings AP-7916 through AP-7945 (Figures 2) were drilled during this project. Seven of the borings (AP-7918, AP-7919, AP-7940, AP-7941, AP-7943, AP-7944, and AP-7945) were drilled to approximately 50 feet below ground surface (bgs). The remaining borings were drilled to approximately 25 feet bgs. The drilling was done with an Acker Soil Max mobile drill rig, mounted on an all-terrain vehicle. Hollow stem augers (8 inch), A-rod, 300 pound slide hammer and a 3-inch by 2-foot steel split spoon were used to drill and collect subsurface soil samples. Soil samples for geotechnical analysis were collected near the surface and at approximately 5-foot intervals until borehole completion. Surface samples were collected directly from the sidewalls of the borings and subsurface soil samples were collected from the split spoon, driven approximately 2 feet ahead of the auger with a 300 pound sliding hammer. Upon retrieval from the boring, a preliminary photoionization detector (PID) reading was taken from the end of the split spoon and recorded in the field log. If there was an elevated PID reading, or any visual or olfactory evidence of contamination, then the split spoon was then opened and the soil samples were rapidly collected with a clean stainless steel spoon and were placed in appropriate containers provided by the laboratory. Samples to be analyzed for volatile analytes were collected before samples to be analyzed for non- or semi-volatile analytes. A new pair of nitrile gloves, and new spoon were used for each sample. A final PID reading was obtained on soil collected from the split spoon and placed into a small plastic ziplock bag that was allowed to warm on the dash of a vehicle for a minimum of 15 minutes (heated headspace method). Several random samples not exhibiting evidence of contamination were also submitted for chemical analysis to determine background levels of analytes. If the split spoon retrieved from the borehole was saturated with groundwater, a heated headspace PID reading was not obtained due to the interference caused by water vapors. Groundwater was typically encountered between 14 and 17 feet bgs. Observations made during sampling, such as, time, weather, and odor or sheen, were also recorded in the field log. Chemist's field notes and observations are summarized in the field-observation summary in Appendix A to this report. A copy of the geotechnical boring logs are provided in Appendix B.

Selected random surface samples were tested for organochlorine pesticides and lead. All other submitted samples were tested for benzene, toluene, ethylbenzene, and xylenes (BTEX), gasoline range organics (GRO), diesel range organics (DRO), residual range organics (RRO) and lead. Labeled sample containers were wrapped in paper towels (for cushioning and absorbency), sealed in individual ziplock bags (to prevent cross-contamination), and packed in a cooler with ice-packs and enough vermiculite to fill any voids in the cooler. A Chain-of-Custody (COC) form and a temperature blank were included in each cooler. Coolers were taped shut with strapping tape in two places and two custody seals were placed on the coolers. Samples (including blind duplicates and field blanks) were shipped to a primary lab (Lauck's Testing Lab, Seattle WA), and selected duplicate samples (and field blanks) were dropped off at a quality assurance (QA) lab (CT&E, Fairbanks). Samples delivered to both labs were analyzed by the following methods:

- BTEX by EPA Method 8021B (modified)
- GRO by State of Alaska Method AK101
- DRO by State of Alaska Method AK102
- RRO by State of Alaska Method AK103
- Lead by EPA Method 6010B
- Organochlorine pesticides by EPA Method 8081A

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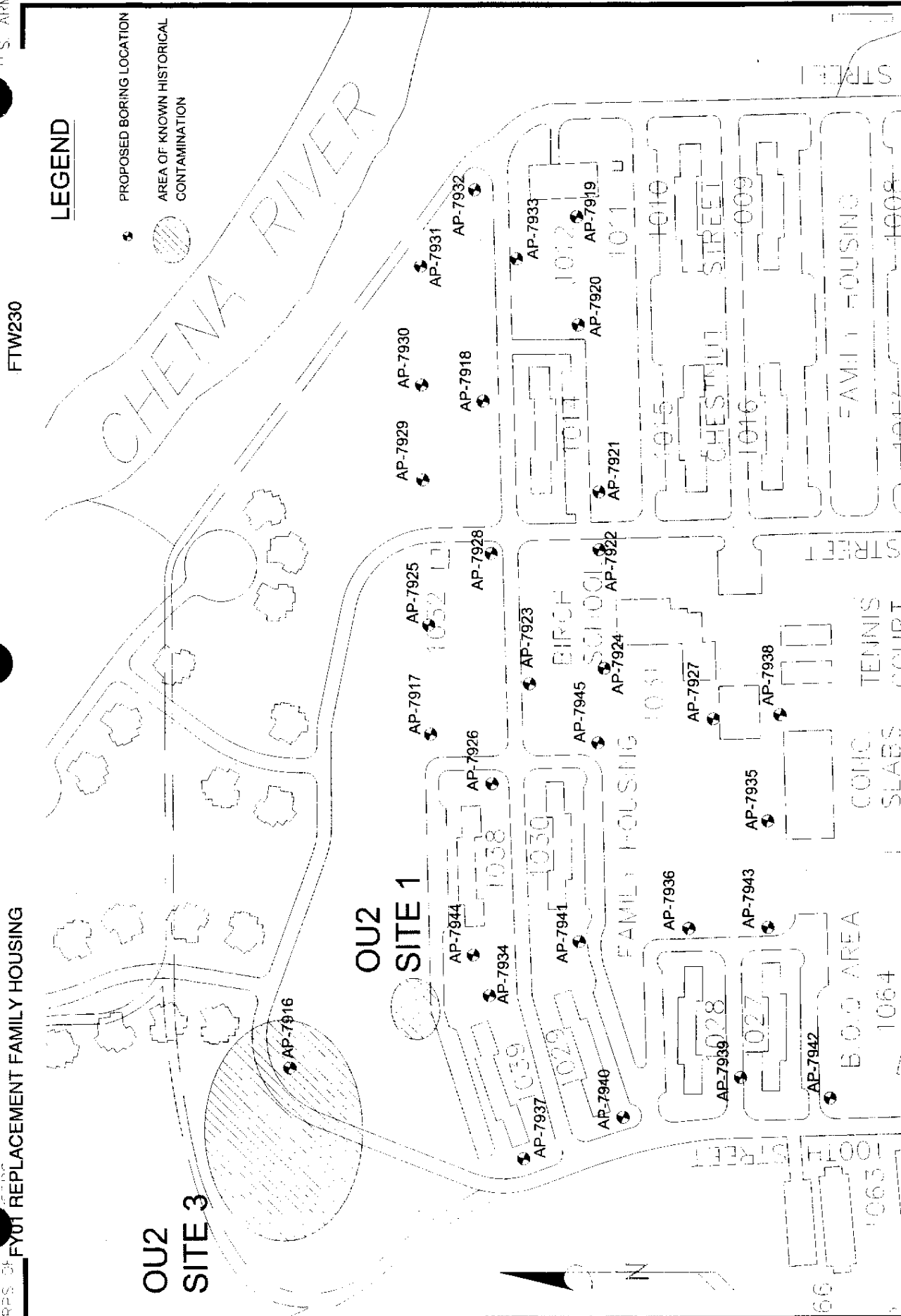
FY01 REPLACEMENT FAMILY HOUSING

LEGEND

- PROPOSED BORING LOCATION
- AREA OF KNOWN HISTORICAL CONTAMINATION

OU2
SITE 3

OU2
SITE 1



ALASKA DISTRICT
CORPS OF ENGINEERS
ENGINEERING SERVICES

APPROXIMATE BOREHOLE LOCATIONS
REPLACEMENT FAMILY HOUSING
FORT WAINWRIGHT, ALASKA

SCALE: NOT TO SCALE
DATE: 15 FEB 2001
DWG. NO.: FIGURE 2

5 Analytical Results

5.1 Applicable Regulatory Levels

Complete data packages are on file at the Alaska District U.S. Army Corps of Engineers. The analytical methods used for this project were selected based upon the nature of the contaminants known to exist in the area, and on the expected regulatory requirements. This report identifies results that exceed the most conservative ADEC 18 AAC 75 cleanup levels. Data summary tables are provided in Appendix C. Soil sample results for GRO and DRO are compared to 18 AAC 75 Method One, Category A, Soil Cleanup Levels. Soil sample results analyzed for BTEX, lead, and organochlorine pesticides are compared to 18 AAC 75 Method Two, Soil Cleanup Levels (Migration to Groundwater in the Under 40 Inch Zone). Table 1, below, summarizes the Cleanup Level (CL) that was used for each analyte.

TABLE 1: APPLICABLE CLEANUP LEVELS	
Contaminant of Concern	18 AAC 75 Soil Cleanup Levels
GRO	50 mg/kg
DRO	100 mg/kg
RRO	2000 mg/kg
Benzene	0.020 mg/kg
Toluene	5.4 mg/kg
Ethylbenzene	5.5 mg/kg
Total Xylenes	78 mg/kg
Lead	400 mg/kg
DDT	88 mg/kg
DDE	150 mg/kg

5.2 Data Quality Evaluation

The laboratory data was sent to Ethix, in Modesto, California, for independent chemical data quality review. The review included evaluation of sample collection, holding times, field, laboratory, and method blanks (to assess cross-contamination), sample duplicates (to assess precision), laboratory control samples (to assess accuracy) and matrix spike/matrix spike duplicate and surrogate recoveries (to assess matrix effect). Sample results have been appropriately flagged a summary of the appropriate chemical data quality evaluation is included below with the chemical results. The complete chemical data quality report is included in Appendix D.

Quality Assurance and Quality Control (QA/QC) triplicate samples were to be collected at a rate of at least 10% of the primary samples per the Work Plan. There were 4 primary samples with 2 QA/QC triplicate samples collected for BTEX, GRO, DRO, and RRO. There were 7 primary samples with 3 QA/QC triplicate samples collected for lead, and there were 6 primary samples for organochlorine pesticides with 1 QA/QC sample collected. The number of Quality Assurance and Quality Control triplicate samples collected was greater than 10% for all target analytes. One triplicate sample for lead (01FWHR11, 01FWHR12, and 01FWHR13) had

intralaboratory results that were not comparable, which may be the result of non-homogeneous sample media or subsamples. As the highest reported result is below regulatory action level, the non-comparable results do not impact the project. All other triplicate sample results are comparable indicating acceptable interlaboratory and intralaboratory comparability.

5.3 Soil Sampling Results

5.3.1 BTEX/GRO

Benzene was detected at levels exceeding the regulatory limit of 0.020 mg/kg in 2 of 4 sampling locations (AP-7916 at 9.5 bgs, and AP-7930 at 4.5 bgs). Low levels of toluene and GRO were also detected in the sample from AP-7930, but well below regulatory limits. No other analytes were reported, and all method reporting limits were below associated regulatory limits. AP-7916 is in the vicinity of Site 3 within Operable Unit 2. The heated headspace PID reading was similar to background levels, and there was no other evidence indicating fuel contamination in the area. Miscellaneous manmade debris (including fiberboard, nails, metal scraps, glass, etc) was encountered between 3 and 6 feet bgs at AP-7930. The soil associated with the debris appeared dark and stained. Samples from AP-7924 and AP 7927 exhibited no evidence of contamination and were collected as random samples to determine background levels of analytes within the project area. A summary of the analytical results is presented below in Table 2 (only the highest reported value for QA/QC triplicate sets are presented).

TABLE 2				
FT. WAINWRIGHT FAMILY HOUSING REVITALIZATION				
BTEX/GRO				
LOCATION OF SAMPLE:	AP-7916	AP-7924	AP-7927	AP-7930
DEPTH OF SAMPLE:	9.5	4" - 6"	1	4.5
FIELD SAMPLE ID: 01FWHR-	QA/QC ¹	08SL	QA/QC ²	18SL
CONCENTRATION UNITS:	mg/Kg	mg/Kg	mg/Kg	mg/Kg
Benzene	0.032 J	ND (0.011)	ND (0.011)	0.022 J
Toluene	ND (0.037) J	ND (0.017)	ND (0.017)	0.023 J
Ethylbenzene	ND (0.025) J	ND (0.011)	ND (0.011)	ND (0.015)
m,p-Xylene (Sum of Isomers)	ND (0.05) J	ND (0.023)	ND (0.023)	ND (0.03)
o-Xylene	ND (0.025) J	ND (0.011)	ND (0.011)	ND (0.015)
Gasoline Range Organics	ND (3.1) J	ND (1.4)	ND (1.4)	2.6 J
1. QA/QC set comprised of samples -01SL, -02SL, and -03SL (only highest value reported in table)				
2. QA/QC set comprised of samples -11SL, -12SL, and -13SL (only highest value reported in table)				
J: Estimated Value.				
ND: Not Detected. (The number in parentheses is the Method Reporting Limit (MRL)).				

Reported results for GRO and BTEX from AP-7916 QA/QC triplicate sample 01FWHR02SL and AP-7930 (01FWHR18SL) are qualified as estimated, and should be considered biased low due to low surrogate recovery. Due to low surrogate recovery, results for BTEX in sample 01FWHR01SL and ethylbenzene, m,p-xylene, o-xylene and toluene for sample 01FWHR03SL

AP-1 are rejected. Due to low surrogate recovery, the gasoline range organics result for sample 01FWHR03SL is rejected. Rejected data are unuseable for any purpose. BTEX results for 01FWHR18SL are qualified as estimated due to elevated sample temperature, and GRO results for 01FWHR18SL are qualified as estimated due to low surrogate recovery. Since rejected data were part of a QA/QC triplicate set, of which a portion of the samples were considered usable, adequate data is available for project purposes.

5.3.2 DRO/RRO

DRO and RRO were detected at all sample sites, but all results were below regulatory limits. AP-7916 is in the vicinity of Site 3 within Operable Unit 2. The heated headspace PID reading was similar to background levels, and there was no other evidence indicating fuel contamination in the area. Miscellaneous manmade debris (including fiberboard, nails, metal scraps, glass, etc) was encountered between 3 and 6 feet bgs at AP-7930. The soil associated with the debris appeared dark and stained, however there did not appear to be evidence of fuel contamination. Samples from AP-7924 and AP 7927 exhibited no evidence of contamination and were collected as random samples to determine background levels of analytes within the project area. Detected levels from these samples may be due to naturally occurring organic material. A summary of the analytical results is presented below in Table 3 (only the highest reported value for QA/QC triplicate sets are presented).

TABLE 3				
FT. WAINWRIGHT FAMILY HOUSING REVITALIZATION				
DRO/RRO				
LOCATION OF SAMPLE:	AP-7916	AP-7924	AP-7927	AP-7930
DEPTH OF SAMPLE:	9.5	4" - 6"	1	4.5
FIELD SAMPLE ID: 01FWHR-	QA/QC ¹	08SL	QA/QC ²	18SL
CONCENTRATION UNITS:	mg/Kg	mg/Kg	mg/Kg	mg/Kg
Diesel Range Organics	16	7.7	6.7	88 J
Residual Range Organics	59	19	28	290 J
1. QA/QC set comprised of samples -01SL, -02SL, and -03SL (only highest value reported in table)				
2. QA/QC set comprised of samples -11SL, -12SL, and -13SL (only highest value reported in table)				
J: Estimated Value				

Sample 01FWHR18SL was reanalyzed due to high surrogate recovery and low laboratory control sample recovery in the original analysis. Due to high sample temperature and high surrogate recovery, DRO and RRO results for sample 01FWHR18SL and its reanalysis are qualified as estimated and results should be considered biased high. In addition, the results for the reanalysis of this sample is qualified as estimated due to holding time exceedance. Reanalysis yielded similar surrogate recovery, and improved laboratory control sample recovery; however, the results from the original analysis are used as the final validated result due to the reanalysis exceeding holding time. DRO and RRO results are considered usable for project purposes.

5.3.3 Lead

Lead was tested in the same sample locations as BTEX, GRO, DRO and RRO samples. In addition, random surface samples were tested for lead. Lead was detected at all sample locations, but none of the results exceeded regulatory limits. A summary of the analytical results is presented below in Table 4 (only the highest reported value for QA/QC triplicate sets are presented).

TABLE 4 FT. WAINWRIGHT FAMILY HOUSING REVITALIZATION LEAD			
LOCATION OF SAMPLE:	DEPTH OF SAMPLE:	FIELD SAMPLE ID: 01FWHR-	Lead (mg/kg)
AP-7916	9.5	QA/QC ¹	5.9
AP-7924	4" - 6"	08SL	7.6
AP-7926	4" - 6"	QA/QC ²	14.9
AP-7927	1	QA/QC ³	110 J
AP-7930	4.5	18SL	197
AP-7937	4" - 6"	19SL	9
AP-7942	4" - 6"	20SL	27
1. QA/QC set comprised of samples -01SL, -02SL, and -03SL (only highest value reported in table)			
2. QA/QC set comprised of samples -15SL, -16SL, and -17SL (only highest value reported in table)			
3. QA/QC set comprised of samples -11SL, -12SL, and -13SL (only highest value reported in table)			
J: Estimated Value.			

Due to poor field duplicate precision, lead results for three samples are qualified as estimated. One QA/QC triplicate sample for lead (01FWHR11, 01FWHR12, and 01FWHR13) had intralaboratory results that were not comparable, which may be the result of non-homogeneous sample media or subsamples. As the highest reported result is below regulatory action level, the non-comparable results do not impact the project.

5.3.4 Organochlorine Pesticides

Samples for organochlorine pesticides analysis were collected from random surface locations throughout the project site. DDT and DDE were detected in 4 of 6 samples collected, at levels well below regulatory limits. A summary of the analytical results is presented below in Table 5 (only the highest reported value for QA/QC triplicate sets are presented).

TABLE				
FT. WAINWRIGHT FAMILY HOUSING REVITALIZATION				
ORGANOCHLORINE PESTICIDES				
LOCATION OF SAMPLE:	DEPTH OF SAMPLE:	FIELD SAMPLE ID: 01FWHR-	4,4'-DDE	4,4'-DDT
AP-7918	4" - 6"	04SL	ND (5.5)	ND (5.5)
AP-7919	4" - 6"	06SL	250	480
AP-7924	0.5 - 1"	07SL	42	86
AP-7926	4" - 6"	QA/QC1	140	230
AP-7937	4" - 6"	19SL	ND (4.7)	ND (4.7)
AP-7942	4" - 6"	20SL	43 J	230 J
1. QA/QC set comprised of samples -15SL, -16SL, and -17SL (only highest value reported in table)				
J: Estimated Value.				
ND: Not Detected. (The number in parentheses is the Method Reporting Limit (MRL)).				

Due to elevated sample temperature, results for all target compounds in two samples (01FWHR19SL and 01FWHR20SL) are qualified as estimated. Due to poor matrix spike accuracy and/or precision, results for 4,4'-DDE, 4,4'-DDT, methoxychlor, endrin and alpha-chlordane in 01FWHR17SL are qualified as estimated. Samples 01FWHR06SL, 01FWHR07SL, 01FWHR15SL and 01FWHR16SL were reanalyzed at a dilution, due to calibration range exceedance for certain target compounds. For samples 01FWHR06SL, 01FWHR15SL and 01FWHR16SL, 4,4'-DDE and 4,4'-DDT results from the diluted analysis were used; for sample 01FWHR07SL, 4,4'-DDT results from the diluted analysis were used. Results and reporting limits for all other compounds were from the original analysis. All pesticide data is usable for project purposes.

6 Conclusion

Benzene was detected at levels exceeding the regulatory limit of 0.020 mg/kg in 2 of 4 sampling locations (AP-7916 at 9.5 bgs, and AP-7930 at 4.5 bgs). All other detected analyte concentrations were below the most stringent 18 AAC 75 regulatory limits. AP-7916 is in the vicinity of Site 3 within Operable Unit 2. The extent of benzene contamination in this area is not known. The heated headspace PID reading was similar to background levels and there was no other evidence indicating fuel contamination in the area. Miscellaneous manmade debris (including fiberboard, nails, metal scraps, glass, etc) was encountered between 3 and 6 feet bgs at AP-7930. The margins of the buried debris in the vicinity of AP-7930 are not known. However, buried debris was not encountered in any of the adjacent boreholes.

7 References

18 AAC 75. Oil and Hazardous Substances Pollution Control Regulations, effective October 1, 1999.

CH2MHill. February 1998. Draft Record of Decision for Operable Unit 5, Fort Wainwright, Fairbanks, Alaska.

HLA. April 1994. Operable Unit 2 Remedial Investigation/Feasibility Study Management Plan, Fort Wainwright, Alaska.

HLA. January 1996. Operable Unit 2 Remedial Investigation Report, Fort Wainwright, Alaska.

HLA. November 1996. Operable Unit 5 Remedial Investigation Report, Fort Wainwright, Alaska.

USACE, 1994, Requirements for the Preparation of Sampling and Analysis Plans, EM 200-1-3.

USACE, 1997, Chemical Quality Assurance for HTRW Projects, EM 200-1-6.

Appendix A

Chemist Field Observation Summary

FY01 REPLACEMENT FAMILY HOUSING

FTW230

**CHEMIST FIELD OBSERVATION SUMMARY
FAMILY HOUSING REVITALIZATION
FORT WAINWRIGHT, ALASKA**

FTW230

BOREHOLE NUMBER	DATE	TIME	DEPTH (in feet)	PID READING	SAMPLES COLLECTED AND ANALYSES DONE	COMMENTS
AP-7916	19 Jan 2001	1015	1	1.1	Did not sample	20° overcast, no wind. Safety meeting: Doug Deters, Mike Anderson, Bill Tester, Ron Ngrilild present. All reviewed and signed site safety plan. Discussed safety issues specific to the site (utilities). Calibrated PID background: 0.4. No evidence of contamination - did not collect sample for chemical analyses.
		1028	5	0.3	Did not sample	No evidence of contamination - did not collect sample for chemical analyses.
		1042	10	0.3	01FWHR01SL 01FWHR02SL (QC Dup) 01FWHR03SL (QA Dup) GRO/BTEX, DRO/RRO, Lead	Preliminary PID reading was obtained by placing probe in the top end of the split spoon. Discovered that drillers had used WD-40 on some of the A-rods, and the elevated preliminary reading is attributed to this. Requested the drilling equipment be steam cleaned after completing borehole. Soil from above the water table has a dark streak or residue, but no other evidence of contamination. Collected confirmation sample.
		1110	15	0.4	Did not sample	Groundwater encountered at 13.2 bgs. Will not collect soil samples from below the water table for chemical analysis. PID readings will be obtained from the split spoon for screening purposes.
		1123 1142	20 25	0.4 0.3	Did not sample Did not sample	No fuel odor or evidence of contamination. No fuel odor or evidence of contamination. Backfilled borehole with cuttings.
AP-7917	19 Jan 2001	1520	1	0.4	Did not sample	Temp: 25°F, partly cloudy, no wind. Background PID: 0.2 No fuel odor or evidence of contamination.
		1534	5	0.4	Did not sample	No fuel odor or evidence of contamination.
		1541	10	0.4	Did not sample	No fuel odor or evidence of contamination.
			15	0.4	Did not sample	Groundwater encountered at 12.9 bgs. No fuel odor or evidence of contamination.
			20 25	0.4 0.4	Did not sample Did not sample	No fuel odor or evidence of contamination. No fuel odor or evidence of contamination. Backfilled borehole with drill cuttings and grouted top several feet.

FY01 REPLACEMENT FAMILY HOUSING

FTW230

**CHEMIST FIELD OBSERVATION SUMMARY
FAMILY HOUSING REVITALIZATION
FORT WAINWRIGHT, ALASKA**

FTW230

BOREHOLE NUMBER	DATE	TIME	DEPTH (in feet)	PID READING	SAMPLES COLLECTED AND ANALYSES DONE	COMMENTS
AP-7918	20 Jan 2001	1210	4-6 inches	NT	01FWHR04SL Pesticides	Temp: 7°F, sunny, no wind. Calibrate PID Background: 0.2 Collected sample from 4-6 inches below ground surface and submitted for pesticides analysis. No evidence of contamination (confirmation sample).
		1227	1	1.4	Did not sample	No evidence of contamination - did not collect sample for chemical analyses.
		1240	5	0.4	Did not sample	No evidence of contamination - did not collect sample for chemical analyses.
		1255	10	0.2	Did not sample	No evidence of contamination - did not collect sample for chemical analyses.
		1306	15	0.2	Did not sample	Sample saturated. Groundwater measured at 15.2 bgs. No fuel odor or evidence of contamination.
		1331	20	0.2	Did not sample	No fuel odor or evidence of contamination.
		1423	25	0.4	Did not sample	No fuel odor or evidence of contamination.
		1439	30	0.5	Did not sample	Background PID: 0.5 No fuel odor or evidence of contamination.
		1508	35	0.2	Did not sample	No fuel odor or evidence of contamination.
		1519	40	0.3	Did not sample	No fuel odor or evidence of contamination.
		1730	50	0.3	Did not sample	Back fill borehole with drill cuttings and grout top of hole.

FY01 REPLACEMENT FAMILY HOUSING

FTW230

**CHEMIST FIELD OBSERVATION SUMMARY
FAMILY HOUSING REVITALIZATION
FORT WAINWRIGHT, ALASKA
FTW230**

BOREHOLE NUMBER	DATE	TIME	DEPTH (in feet)	PID READING	SAMPLES COLLECTED AND ANALYSES DONE	COMMENTS
AP-7919	21 Jan 2001	1025	4-6 inches	NT	01FWHR06SL Pesticides	Collected sample for pesticides from 4-6 bgs. No evidence of contamination (confirmation sample)
		1039	1	1.2	Did not sample	No fuel odor or evidence of contamination. Collected grab sample for Mike (at airport picking up Steve Henslee).
		1048	5	0.6	Did not sample	No evidence of contamination - did not collect sample for chemical analyses.
		1103	10	0.3	Did not sample	No evidence of contamination - did not collect sample for chemical analyses.
		1330	15	0.4	Did not sample	Bottom half of split spoon saturated. No evidence of contamination - did not collect sample for chemical analyses. Groundwater measured at 16.8 bgs.
		1403	20	0.3	Did not sample	No fuel odor or evidence of contamination.
		1416	25	0.3	Did not sample	No fuel odor or evidence of contamination.
		1442	30	0.4	Did not sample	No fuel odor or evidence of contamination.
		1459	35	0.2	Did not sample	No fuel odor or evidence of contamination.
		1509	40	0.3	Did not sample	No fuel odor or evidence of contamination.
AP-7920	22 Jan 2001	1545	50	0.2	Did not sample	No fuel odor or evidence of contamination. All cuttings screened clean and were used to backfill borehole. Remaining cuttings were spread out on the ground surface. Piezometer placed in borehole to approximately 20 bgs. Top of borehole grouted.
		0835	1	0.8	Did not sample	Temp: 10°F overcast, no wind. Went to Bldg 3487 to pick up decon water. Calibrate PID Background: 0.4
		0842	5	0.4	Did not sample	No evidence of contamination - did not collect sample for chemical analyses.
		0859	10	0.4	Did not sample	No evidence of contamination - did not collect sample for chemical analyses.
		0910	15	0.5	Did not sample	Sample slightly damp. No evidence of contamination - did not collect sample for chemical analyses.
		0919	20	0.3	Did not sample	Sample saturated. Groundwater measured at 17.0 bgs. No fuel odor or evidence of contamination.
		0948	25	0.3	Did not sample	No fuel odor or evidence of contamination. Backfilled borehole and grouted surface.

FTW230

FY01 REPLACEMENT FAMILY HOUSING

**CHEMIST FIELD OBSERVATION SUMMARY
FAMILY HOUSING REVITALIZATION
FORT WAINWRIGHT, ALASKA**

FTW230

BOREHOLE NUMBER	DATE	TIME	DEPTH (in feet)	PID READING	SAMPLES COLLECTED AND ANALYSES DONE	COMMENTS
AP-7921	22 Jan 2001	1050	1	0.4	Did not sample	Temp: 15°F, mostly cloudy, no wind. Background PID: 0.3 No evidence of contamination - did not collect sample for chemical analyses.
		1114	5	0.3	Did not sample	No evidence of contamination - did not collect sample for chemical analyses.
		1123	10	0.4	Did not sample	No evidence of contamination - did not collect sample for chemical analyses.
		1135	15	0.4	Did not sample	Bottom of split spoon saturated. Groundwater measured at 16.2 bgs. No fuel odor or evidence of contamination.
		1155	20	0.4	Did not sample	No fuel odor or evidence of contamination.
		1212	25	0.4	Did not sample	No fuel odor or evidence of contamination. Drill cuttings backfilled in borehole and surface was grouted.
		1404	1	1.0	Did not sample	Temp: 15°F, overcast, no wind. Background PID: 0.3 Earthy smell, no fuel odor or evidence of contamination.
AP-7922	22 Jan 2001	1423	5	0.4	Did not sample	No evidence of contamination - did not collect sample for chemical analyses.
		1435	10	0.4	Did not sample	No evidence of contamination - did not collect sample for chemical analyses.
		1448	15	0.5	Did not sample	Bottom % of split spoon damp. No evidence of contamination - did not collect sample for chemical analyses.
		1504	20	0.4	Did not sample	Sample saturated. Groundwater measured at 16.75 bgs. No fuel odor or evidence of contamination.
		1530	25	0.4	Did not sample	No fuel odor or evidence of contamination. Backfilled drill cuttings and grouted surface of borehole.

FY01 REPLACEMENT FAMILY HOUSING

FTW230

**CHEMIST FIELD OBSERVATION SUMMARY
FAMILY HOUSING REVITALIZATION
FORT WAINWRIGHT, ALASKA
FTW230**

BOREHOLE NUMBER	DATE	TIME	DEPTH (in feet)	PID READING	SAMPLES COLLECTED AND ANALYSES DONE	COMMENTS
AP-7923	22 Jan 2001	1626	1	2.6	Did not sample	Earthy smell. No fuel odor in cold sample, possibly a very faint odor in the warm sample, but not enough to indicate significant contamination.
		1632	5	0.5	Did not sample	No evidence of contamination - did not collect sample for chemical analyses.
		1648	10	0.6	Did not sample	No evidence of contamination - did not collect sample for chemical analyses.
		1705	15	0.6	Did not sample	No evidence of contamination - did not collect sample for chemical analyses.
		1729	20	0.3	Did not sample	Sample saturated. Groundwater measured at 16.5 bgs. No fuel odor or evidence of contamination.
		1746	25	0.3	Did not sample	No fuel odor or evidence of contamination. Backfilled drill cuttings and grouted surface of borehole.

FY01 REPLACEMENT FAMILY HOUSING

FTW230

**CHEMIST FIELD OBSERVATION SUMMARY
FAMILY HOUSING REVITALIZATION
FORT WAINWRIGHT, ALASKA
FTW230**

BOREHOLE NUMBER	DATE	TIME	DEPTH (in feet)	PID READING	SAMPLES COLLECTED AND ANALYSES DONE	COMMENTS
AP-7924	23 Jan 2001	0852	4-6 inches	NT	01FWHR07SL Pesticides and lead	Temp: 10°F, partly cloudy, slight east wind. Collect sample for pesticides and lead from 4-6 inches bgs. No evidence of contamination.
		0858	1	0.3	01FWHR08SL GRO/BTEX, DRO/RRO, Lead	No fuel odor or evidence of contamination. Collected confirmation sample with additional volumes to run MS/MSD duplicates.
		0915	5	0.3	Did not sample	No evidence of contamination - did not collect sample for chemical analyses.
		0928	10	0.4	Did not sample	No evidence of contamination - did not collect sample for chemical analyses.
		0937	15	0.3	Did not sample	No evidence of contamination - did not collect sample for chemical analyses.
		1005	20	0.3	Did not sample	Sample saturated. Groundwater measured at 17.5 bgs. No fuel odor or evidence of contamination.
		1017	25	0.4	Did not sample	Beginning to snow. No fuel odor or evidence of contamination.
		1240	30	NT	Did not sample	Split spoon stuck inside auger. Attempted to back-hammer, then began removing auger sections. Finally got center rod removed and discovered that the split spoon was turning and drilling while trying to float it down for the next sample. This caused the end of the split spoon to mushroom, thus destroying the spoon. The mushroomed end of the spoon caused sand to wedge around the shaft and spoon during retrieval. Replaced spoon and continued on to 40.
		1525	40	NT	Did not sample	Pulled cutting head and lowered split spoon to drive sample. Heave encountered at approximately 17 bgs (~23 feet of heave). Decided not to sample. Since there is data for the first 25 feet, we will drill a 50 foot borehole at another location.
						Packaged samples and trip blanks for shipment to labs. Trip blanks were as follows: 01FWHR09SL trip blank to primary lab 01FWHR10SL trip blank to QA lab

FTW230

FY01 REPLACEMENT FAMILY HOUSING

**CHEMIST FIELD OBSERVATION SUMMARY
FAMILY HOUSING REVITALIZATION
FORT WAINWRIGHT, ALASKA**

FTW230

BOREHOLE NUMBER	DATE	TIME	DEPTH (in feet)	PID READING	SAMPLES COLLECTED AND ANALYSES DONE	COMMENTS
AP-7925	24 Jan 2001	0630	-	-	-	Travel to Chena Project Office and picked up additional lengths of PVC.
		0835	1	NT	Did not sample	Temp: 10°F, overcast, no wind. PID not working. Called office and had another sent via Goldstreak. No evidence of contamination - did not collect sample for chemical analyses.
		0937	5	NT	Did not sample	Steve had already collected samples from 5 and 10 feet bgs in ziplock bags. No evidence of contamination - did not collect sample for chemical analyses.
		0937	10	NT	Did not sample	No evidence of contamination - did not collect sample for chemical analyses.
		0939	15	NT	Did not sample	Sample saturated. Groundwater measured at 13.4 bgs. No fuel odor or evidence of contamination.
		0955	20	NT	Did not sample	No fuel odor or evidence of contamination.
		0955	25	NT	Did not sample	No fuel odor or evidence of contamination. Added peizometer to a depth of approximately 16 feet bgs. Backfilled borehole with drill cuttings and grouted surface.
AP-7926	24 Jan 2001	1130	4-6 inches	NT	01FWHR15SL 01FWHR16SL (QC Dup) 01FWHR17SL (QA Dup) Lead and Pesticides	Temp: 15°F, overcast, no wind. Collected sample from 4-6 inches bgs for lead and pesticides testing. No fuel odor or evidence of contamination (confirmation sample).
		1138	1	0.6	Did not sample	No evidence of contamination - did not collect sample for chemical analyses.
		1150	5	0.9	Did not sample	No evidence of contamination - did not collect sample for chemical analyses.
		1158	10	0.9	Did not sample	No evidence of contamination - did not collect sample for chemical analyses.
		1206	15	1.1	Did not sample	Bottom ... of split spoon wet. No evidence of contamination - did not collect sample for chemical analyses.
		1215	20	NT	Did not sample	Sample saturated. No fuel odor or evidence of contamination.
		1237	25	NT	Did not sample	No fuel odor or evidence of contamination. Backfill and grout borehole.

FTW230

**CHEMIST FIELD OBSERVATION SUMMARY
FAMILY HOUSING REVITALIZATION
FORT WAINWRIGHT, ALASKA**

FTW230

BOREHOLE NUMBER	DATE	TIME	DEPTH (in feet)	PID READING	SAMPLES COLLECTED AND ANALYSES DONE	COMMENTS
AP-7927	24 Jan 2001	1225	1	1.6	01FWHR11SL 01FWHR12SL (QC Dup) 01FWHR13SL (QA Dup) GRO/BTEX, DRO/RRO, Lead	Temp: 20°F, overcast, no wind. Picked up PID at Goldstreak. Model HW-101. Calibrate PID background: -0.4 to 0.2 No fuel odor or evidence of contamination. Collected QA/QC sample duplicate set with extra volumes for MS/MSD s.
		1547	5	0.7 (cold) 17 (warm)	Did not sample	No evidence of contamination - did not collect sample for chemical analyses. Suspect that heated water vapor is interfering with heated headspace PID readings.
		1554	10	0.6 (cold) 15 (warm)	Did not sample	No evidence of contamination - did not collect sample for chemical analyses. PID probe working intermittently will move as little as possible and screen from ziplock bag. Discovered cord to probe not completely turned in fixed.
		1605	15	NT	Did not sample	Sample saturated. No fuel odor or evidence of contamination. PID background ranging from 0.0 to 1.4. Suspect that high heated headspace PID values for 5 and 10 foot samples is due to water vapor interference. Meter jumps up and stays high for approximately 30 seconds and then falls back down. Tested hypothesis by placing a damp paper towel in a ziplock bag and heating on the dashboard. Results were similar (14 ppm) and PID took over a minute to go back down to 1-2 ppm. Will rely on cold PID readings for damp samples.
		1635	20	NT	Did not sample	Sample saturated. Very little recovery fine sand with decomposing organic matter and dark water in spoon. Slight sewage-like odor (decomposing organics)
		1650	25	NT	Did not sample	Very little sample recovery. Same odor as previous sample. No evidence of contamination. Backfilled and grouted borehole. Moved over 3 feet to re-collect 20 foot sample.

FY01 REPLACEMENT FAMILY HOUSING

FTW230

FY01 REPLACEMENT FAMILY HOUSING

**CHEMIST FIELD OBSERVATION SUMMARY
FAMILY HOUSING REVITALIZATION
FORT WAINWRIGHT, ALASKA
FTW230**

BOREHOLE NUMBER	DATE	TIME	DEPTH (in feet)	PID READING	SAMPLES COLLECTED AND ANALYSES DONE	COMMENTS
AP-7928	25 Jan 2001	0800	-	-	-	Dropped samples off at FedEx for shipment to Lauck s.
		0900	-	-	-	Onsite, 20°, overcast, no wind. Collected ziplock bags of samples already taken by Steve. He had already collected 5, 10, and 15 foot samples. Will screen after calibration PID. Instructed Steve (engineer) and drillers not to collect samples above water table without screening with a PID on future boreholes.
		0935	5	0.6 (cold) 3.6 (warm)	Did not sample	No evidence of contamination - did not collect sample for chemical analyses.
		0935	10	0.4 (cold) 2.2 (warm)	Did not sample	No evidence of contamination - did not collect sample for chemical analyses.
		0935	15	0.2 (cold) 8.2 (warm)	Did not sample	No evidence of contamination - did not collect sample for chemical analyses. High heated headspace reading attributed to moisture interference.
		0947	20	3.2	Did not sample	Background PID: 3.2 Sample saturated. Groundwater measured at 16.5 bgs. No fuel odor or evidence of contamination.
		1000	25	2.8	Did not sample	No fuel odor or evidence of contamination. Backfilled and grouted borehole.

FY01 REPLACEMENT FAMILY HOUSING

FTW230

**CHEMIST FIELD OBSERVATION SUMMARY
FAMILY HOUSING REVITALIZATION
FORT WAINWRIGHT, ALASKA**

FTW230

BOREHOLE NUMBER	DATE	TIME	DEPTH (in feet)	PID READING	SAMPLES COLLECTED AND ANALYSES DONE	COMMENTS
AP-7929	25 Jan 2001	1047	1	5.8	Did not sample	Temp: 20°F, overcast, no wind. Background PID: 0.4 to 3.8 (varies) Earthy smell-No fuel odor or evidence of contamination did not sample.
		1058	5	3.2	Did not sample	No evidence of contamination - did not collect sample for chemical analyses.
		1109	10	3.8	Did not sample	No evidence of contamination - did not collect sample for chemical analyses.
		1118	15	6.4	Did not sample	Top of sample wet, bottom saturated. Did not sample. No fuel odor or evidence of contamination.
		1139	20	0.6	Did not sample	Sample saturated. Groundwater measured at 18.5 bgs. No fuel odor or evidence of contamination.
		1203	25	0.6	Did not sample	No fuel odor or evidence of contamination. Backfilled and grouted boreholes.
	25 Jan 2001					Picked up new lamps for broken PID shipped from District office via Goldstreak. Tried replacing lamp no change. Tried moving cable attaching probe to main body around caused readings to change so I disassembled connection harness and discovered a loose wire. Put wire back in place and reassembled. Problem fixed. While meter was not working properly it would also default to a 11.7 mV lamp setting. Problem seemed to correct when wire was fixed. Traveled to Interior Alaska Fish Processors and picked up 20 gel-ice packs.

FTW230

FY01 REPLACEMENT FAMILY HOUSING

**CHEMIST FIELD OBSERVATION SUMMARY
FAMILY HOUSING REVITALIZATION
FORT WAINWRIGHT, ALASKA**

FTW230

BOREHOLE NUMBER	DATE	TIME	DEPTH (In feet)	PID READING	SAMPLES COLLECTED AND ANALYSES DONE	COMMENTS
AP-7930	25 Jan 2001	1601	1	0.8	Did not sample	Back onsite, 25°F, mostly cloudy, no wind. Recalibrate the repaired PID background: 0.3 No evidence of contamination - did not collect sample for chemical analyses.
		1610	5	0.6	01FWHR18SL GRO/BTEX, DRO/RRO, 8 RCRA metals.	No fuel odor split spoon and cuttings have manmade debris (fiberboard, nails, metal scraps, glass, etc), dark soil. Collected sample for lab analysis.
		1621	10	0.4	Did not sample	Natural soils with no evidence of contamination - did not collect sample for chemical analyses.
		1647	15	0.6	Did not sample	Sample saturated. Groundwater measured at 13.7 bgs. No fuel odor or evidence of contamination.
		1656	20	0.5	Did not sample	No fuel odor or evidence of contamination.
		1710	25	0.5	Did not sample	No fuel odor or evidence of contamination. Most debris from 4-7 appears to be construction/household debris with no obvious odors or elevated PID readings. Backfilled and grouted borehole. Augers were washed as a precautionary measure.
		0825	1	0.5	Did not sample	Temp: 15°F, overcast, slight west wind. Calibrate PID background: 0.4 No evidence of contamination - did not collect sample for chemical analyses.
AP-7931	26 Jan 2001	0834	5	0.4	Did not sample	No evidence of contamination - did not collect sample for chemical analyses.
		0846	10	0.5	Did not sample	No evidence of contamination - did not collect sample for chemical analyses.
		0858	15	0.5	Did not sample	Sample saturated. Groundwater measured at 14.5 bgs. No fuel odor or evidence of contamination.
		0906	20	0.5	Did not sample	No fuel odor or evidence of contamination.
		0929	25	0.5	Did not sample	No fuel odor or evidence of contamination. Backfilled borehole and grouted surface

FY01 REPLACEMENT FAMILY HOUSING

FTW230

**CHEMIST FIELD OBSERVATION SUMMARY
FAMILY HOUSING REVITALIZATION
FORT WAINWRIGHT, ALASKA**

FTW230

BOREHOLE NUMBER	DATE	TIME	DEPTH (in feet)	PID READING	SAMPLES COLLECTED AND ANALYSES DONE	COMMENTS
AP-7932	26 Jan 2001	1018	1	0.5	Did not sample	Temp: 20°F overcast, slight wind. Background PID: 0.5 No evidence of contamination - did not collect sample for chemical analyses.
		1040	5	0.4	Did not sample	No evidence of contamination - did not collect sample for chemical analyses. Sample in split spoon was frozen.
		1058	10	0.9	Did not sample	No fuel odor or evidence of contamination. Some chunks of wood and metal banding found in drill cuttings.
		1103	15	0.4	Did not sample	No evidence of contamination - did not collect sample for chemical analyses. Dark organic rich silt, swampy odor. Sample damp.
		1130	20	0.5	Did not sample	Sample saturated. Groundwater measured at 16.4 bgs. No fuel odor or evidence of contamination.
		1141	25	0.4	Did not sample	No fuel odor or evidence of contamination. Backfilled and grouted borehole.
		1329	1	0.4	Did not sample	Temp: 25°F, overcast. Background PID: 0.3 No evidence of contamination - did not collect sample for chemical analyses.
AP-7933	26 Jan 2001	1336	5	0.2	Did not sample	No evidence of contamination - did not collect sample for chemical analyses.
		1342	10	0.3	Did not sample	No evidence of contamination - did not collect sample for chemical analyses.
		1410	15	0.3	Did not sample	No evidence of contamination - did not collect sample for chemical analyses.
		1421	20	0.2	Did not sample	Sample saturated. No fuel odor or evidence of contamination.
		1433	25	0.3	Did not sample	No fuel odor or evidence of contamination.

FY01 REPLACEMENT FAMILY HOUSING

FTW230

**CHEMIST FIELD OBSERVATION SUMMARY
FAMILY HOUSING REVITALIZATION
FORT WAINWRIGHT, ALASKA**

FTW230

BOREHOLE NUMBER	DATE	TIME	DEPTH (In feet)	PID READING	SAMPLES COLLECTED AND ANALYSES DONE	COMMENTS
AP-7934	26 Jan 2001	1544	1	0.4	Did not sample	Temp: 25°F, mostly cloudy, slight east wind. Background PID: 0.3 No evidence of contamination - did not collect sample for chemical analyses. Cut through some tree roots.
		1550	5	0.3	Did not sample	No evidence of contamination - did not collect sample for chemical analyses.
		1557	10	0.4	Did not sample	No evidence of contamination - did not collect sample for chemical analyses.
		1606	15	0.2	Did not sample	Sample saturated. Groundwater measured at 15.9 bgs. No fuel odor or evidence of contamination.
		1621	20	0.3	Did not sample	No fuel odor or evidence of contamination.
		1630	25	0.3	Did not sample	No fuel odor or evidence of contamination. Backfilled and grouted borehole.
AP-7935	27 Jan 2001	0913	1	1.8	Did not sample	Temp: 18°F, partly cloudy, no wind. Calibrated analog PID (digital has a low battery), background: 0.4 to 1.2 (jumping up to 5 at times) No evidence of contamination - did not collect sample for chemical analyses.
		0918	5	2.1	Did not sample	No evidence of contamination - did not collect sample for chemical analyses.
		0931	10	2.5	Did not sample	No evidence of contamination - did not collect sample for chemical analyses.
		0937	15	0.6	Did not sample	Sample saturated. No fuel odor or evidence of contamination.
		0954	20	9.0	Did not sample	Groundwater measured at 17.2 bgs. No fuel odor or evidence of contamination. Suspect elevated PID reading due to moisture interference.
		1008	25	2.8	Did not sample	No fuel odor or evidence of contamination. Backfilled and grouted borehole.

FY01 REPLACEMENT FAMILY HOUSING

FTW230

**CHEMIST FIELD OBSERVATION SUMMARY
FAMILY HOUSING REVITALIZATION
FORT WAINWRIGHT, ALASKA
FTW230**

BOREHOLE NUMBER	DATE	TIME	DEPTH (in feet)	PID READING	SAMPLES COLLECTED AND ANALYSES DONE	COMMENTS
AP-7936	27 Jan 2001	1105	1	6.8	Did not sample	Temp: 15°F, partly cloudy, no wind. Background PID: 2.2 to 2.8 No evidence of contamination - did not collect sample for chemical analyses.
		1108	5	3.2	Did not sample	No evidence of contamination - did not collect sample for chemical analyses.
		1123	10	2.4	Did not sample	No evidence of contamination - did not collect sample for chemical analyses.
		1130	15	2.9	Did not sample	Swampy smell. No evidence of contamination - did not collect sample for chemical analyses. Bottom of split spoon wet.
		1153	20	3.4	Did not sample	Sample saturated. Groundwater measured at 16.0 bgs. No fuel odor or evidence of contamination.
		1214	25	1.1	Did not sample	No fuel odor or evidence of contamination. Backfilled and grouted borehole.
		1359	4-6 inches	NT	01 FWHR19SL Lead and Pesticides	Temp: 20°F, light snow, no wind. Background PID: 2.4 to 3.8 Collected sample from 4-6 bgs for lead and pesticides. No evidence of contamination (confirmation sample).
AP-7937	27 Jan 2001	1437	1	2.6 (cold) 400 (warm)	Did not sample	No fuel odor or evidence of contamination. PID is cold to the touch suspect that heated water vapors are condensing on lamp and causing interference. After borehole completion I heated the probe in the same manner as I heated the samples and then resampled several of the warm samples the result were of similar magnitude as the readings obtained from the cold samples. Will base final PID readings for this borehole on values obtained from cold samples.
		1448	5	1.4 (cold) 180 (warm)	Did not sample	No evidence of contamination - did not collect sample for chemical analyses. (moisture interference in warm sample)
		1457	10	1.8 (cold) 210 (warm)	Did not sample	No evidence of contamination - did not collect sample for chemical analyses. (moisture interference in warm sample)
		1510	15	1.8 (cold) 380 (warm)	Did not sample	No evidence of contamination - did not collect sample for chemical analyses. (moisture interference in warm sample). Bottom ... of split spoon wet.
		1532	20	7.8	Did not sample	Sample saturated. Groundwater measured at 15.2 bgs. No fuel odor or evidence of contamination.
		1545	25	1.7	Did not sample	No fuel odor or evidence of contamination. Backfilled and grouted borehole.

FY01 REPLACEMENT FAMILY HOUSING

FTW230

**CHEMIST FIELD OBSERVATION SUMMARY
FAMILY HOUSING REVITALIZATION
FORT WAINWRIGHT, ALASKA**

FTW230

BOREHOLE NUMBER	DATE	TIME	DEPTH (In feet)	PID READING	SAMPLES COLLECTED AND ANALYSES DONE	COMMENTS
AP-7938	28 Jan 2001	0808	1	0.4	Did not sample	Temp: 15°F, no wind. Calibrate PID background: 0.3 No evidence of contamination - did not collect sample for chemical analyses.
		0826	5	0.7	Did not sample	No evidence of contamination - did not collect sample for chemical analyses. Wood fragments encountered in sample.
		0844	10	1.2	Did not sample	No evidence of contamination - did not collect sample for chemical analyses. Low sample recovery drove spoon into buried wood.
		0905	15	0.6	Did not sample	Sample saturated. Groundwater measured at 13.1 bgs. No fuel odor or evidence of contamination.
		0927	20	0.4	Did not sample	No fuel odor or evidence of contamination.
		0955	25	0.4	Did not sample	No fuel odor or evidence of contamination. Backfilled and grouted borehole.
		1102	1	0.4	Did not sample	Temp: 15°, overcast, no wind. Background PID: 0.3 Drilled through asphalt road. Faint fuel odor associated with asphalt cuttings. Did not sample.
AP-7939	28 Jan 2001	1116	5	0.3	Did not sample	No evidence of contamination - did not collect sample for chemical analyses. Sample frozen.
		1127	10	0.3	Did not sample	No evidence of contamination - did not collect sample for chemical analyses.
		1133	15	0.4	Did not sample	Sample saturated. No fuel odor or evidence of contamination.
		1155	20	0.4	Did not sample	No fuel odor or evidence of contamination.
		1218	25	0.4	Did not sample	No fuel odor or evidence of contamination. Backfilled and grouted hole and then patched asphalt road.

FY01 REPLACEMENT FAMILY HOUSING

FTW230

**CHEMIST FIELD OBSERVATION SUMMARY
FAMILY HOUSING REVITALIZATION
FORT WAINWRIGHT, ALASKA
FTW230**

BOREHOLE NUMBER	DATE	TIME	DEPTH (in feet)	PID READING	SAMPLES COLLECTED AND ANALYSES DONE	COMMENTS
AP-7940	28-29 Jan 2001	1505	1	0.2	Did not sample	Jan 28, 20°F, overcast, no wind. Background PID: 0.3 No evidence of contamination - did not collect sample for chemical analyses.
		1513	5	0.3	Did not sample	No evidence of contamination - did not collect sample for chemical analyses.
		1520	10	0.3	Did not sample	No evidence of contamination - did not collect sample for chemical analyses.
		1529	15	0.3	Did not sample	Sample wet. No evidence of contamination - did not collect sample for chemical analyses.
		1543	20	0.4	Did not sample	Sample saturated. Groundwater measured at 15.4 bgs. No evidence of contamination - did not collect sample for chemical analyses. Secured site and shut down for the day
		1019	25	0.6	Did not sample	Jan 29, -3°F, clear, no wind. Calibrate PID background: 0.4 No fuel odor or evidence of contamination. PID screwed up while turning on disassembled wiring harness and yellow wire had again pulled loose repaired and reassembled. Suspect that wire pulls loose while being place in case.
		1044	30	0.7	Did not sample	No fuel odor or evidence of contamination.
		1111	40	0.6	Did not sample	No fuel odor or evidence of contamination.
		1202	50	0.6	Did not sample	No fuel odor or evidence of contamination. Backfilled and grouted borehole.

FY01 REPLACEMENT FAMILY HOUSING

FTW230

**CHEMIST FIELD OBSERVATION SUMMARY
FAMILY HOUSING REVITALIZATION
FORT WAINWRIGHT, ALASKA**

FTW230

BOREHOLE NUMBER	DATE	TIME	DEPTH (in feet)	PID READING	SAMPLES COLLECTED AND ANALYSES DONE	COMMENTS
AP-7941	29 Jan 2001	1311	1	0.7	Did not sample	Temp: 5°F, clear, slight variable wind. Background PID: 0.6 No evidence of contamination - did not collect sample for chemical analyses.
		1331	5	0.5	Did not sample	No evidence of contamination - did not collect sample for chemical analyses.
		1339	10	0.5	Did not sample	No evidence of contamination - did not collect sample for chemical analyses.
		1347	15	0.4	Did not sample	Sample saturated. No fuel odor or evidence of contamination.
		1355	20	NT	Did not sample	Picked up lunch and paper work for drillers.
		1423	25	NT	Did not sample	Back onsite. PID wires came loose again. Tried to repair, but other wires began to come loose will wait to fix when back in office. Went and picked up analog PID from hotel room. Did not obtain PID readings from below water table for this borehole.
			30	NT	Did not sample	
			35	NT	Did not sample	
			40	NT	Did not sample	
			45	NT	Did not sample	
AP-7942	29 Jan 2001	1610	50	NT	Did not sample	No fuel odor or evidence of contamination in any of the drill cuttings. Backfilled and grouted borehole.
		1714	4-6 inches	NT	01FWHR20SL Lead and Pesticides	Temp: 0°F, clear, no wind. Background PID: 0.6 to 2.4 Collected sample from 4-6 inches bgs for lead and pesticides analysis.
		1723	1	0.8	Did not sample	No evidence of contamination - did not collect sample for chemical analyses.
		1731	5	0.0	Did not sample	No evidence of contamination - did not collect sample for chemical analyses.
		1743	10	0.3	Did not sample	No evidence of contamination - did not collect sample for chemical analyses.
		1750	15	-0.2	Did not sample	Sample saturated. Groundwater measured at 14 bgs. No fuel odor or evidence of contamination.
		1810	20	0.2	Did not sample	No fuel odor or evidence of contamination.
		1823	25	0.5	Did not sample	No fuel odor or evidence of contamination. Added peizometer to borehole, backfilled and grouted.

FTW230

FY01 REPLACEMENT FAMILY HOUSING

**CHEMIST FIELD OBSERVATION SUMMARY
FAMILY HOUSING REVITALIZATION
FORT WAINWRIGHT, ALASKA
FTW230**

BOREHOLE NUMBER	DATE	TIME	DEPTH (in feet)	PID READING	SAMPLES COLLECTED AND ANALYSES DONE	COMMENTS
	29 Jan 2001	1945				Packaged samples for shipment via FedEx. Trip Blank 01FWHR21SL: Trip blank to primary lab. Requested 14 day turn-around-times on data packages. Shipped samples 0800, 30 Jan 2001.
AP-7943	30 Jan 2001	0931	1	1.6	Did not sample	Temp: -10°F, clear, no wind. Calibrate PID background: 0.4 No evidence of contamination - did not collect sample for chemical analyses.
		0939	5	0.9	Did not sample	No evidence of contamination - did not collect sample for chemical analyses.
		0946	10	1.6	Did not sample	No evidence of contamination - did not collect sample for chemical analyses.
		0955	15	NT	Did not sample	Sample saturated. No fuel odor or evidence of contamination. Drillers out of propane went to Hometown Propane and filled bottle. Went to resident office and faxed paperwork for Bill Tester. Had Steve Henslee screen samples for contamination during my absence none detected.
			20	NT	Did not sample	
			25	NT	Did not sample	
			30	NT	Did not sample	
			35	NT	Did not sample	
		1126	40	0.7	Did not sample	No fuel odor or evidence of contamination.
		1141	50	1.1	Did not sample	No fuel odor or evidence of contamination. Backfilled and grouted borehole.